

Remarks/Arguments

Reconsideration of the above-identified application in view of the present amendment is respectfully requested. Claims 1-41 are pending. Claims 15-41 have been withdrawn as being drawn to unelected species. Claim 11 has been amended. New claim 42 has been added.

Claim Rejections under 35 U.S.C. §102

Claims 1-9, 12, and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Vetillard (WO 0206441). That rejection is respectfully traversed.

Claim 1 recites a bioreactor including a housing defining a first chamber that contains a first liquid medium. At least one gas permeable membrane defines at least a portion of the housing. The membrane allows gas flow through the housing into the first chamber. A hydrostatic loading module transmits hydrostatic pressure through the membrane to the first liquid medium contained in the first chamber.

Vetillard does not teach or suggest a hydrostatic loading module that transmits hydrostatic pressure through a membrane to a first liquid medium contained in a first chamber. The Examiner asserts that elements C1 and C3 constitute hydrostatic loading modules and that the “downward phase” and “ascending phase” are created by varying pressure within the hydrostatic loading modules (Office Action page 3). In Vetillard, however, these phases are always conducted under hydrodynamic conditions – not hydrostatic.

In particular, Vetillard teaches that, during the downward phase, pump P1 circulates nutritive media F1 through the zone C1, thereby applying hydrodynamic pressure p1 through the membrane M1 and into the zone C2. The pressure p1

forces waste products to drain from the zone C2, through the membrane M2, into the zone C3, and out of the system via a valve V3 (Fig. 2). This drainage is accomplished while the pump P3 is inactive, i.e., when no fluid is supplied to the zone C3. Likewise, during the ascending phase, pump P3 circulates dynamic liquid media F3 through the zone C3. This applies hydrodynamic pressure p_3 through the membrane M2 and into the zone C2, thereby causing nutrients in the media F3 to ascend into the zone C1 to replenish the tank R1 of fresh nutrient media F1 (Fig. 3). This replenishing is accomplished while the pump P1 is inactive, i.e., when no fluid is supplied to the zone C1. Accordingly, any pressure applied through the membranes M1 or M2 is due to hydrodynamic forces, not the hydrostatic conditions as recited in claim 1. For these reasons, it is respectfully submitted that claim 1 is patentable over Vetillard and therefore allowable.

Claims 3-9, 12, and 14 depend from claim 1 and are allowable for at least the same reasons as claim 1 and for the specific limitations recited therein.

Claim Rejections under 35 U.S.C. §103

Claims 10, 11, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vetillard (WO 0206441) as applied to claim 1, and further in view of Jensen (US20040077075). Claims 10, 11, and 13 depend from claim 1 and are allowable for at least the same reasons as claim 1 and for the specific limitations recited therein.

New Claims

Claim 42 recites that the at least one gas permeable membrane comprises two identical membranes positioned on opposite sides of the first chamber. It is

respectfully submitted that the art of record does not teach or suggest this subject matter. In Vetillard, the membranes M1 and M2 specifically have different constructions, namely cutting thresholds of .2-.4 μ m and 10-12KDa, respectively (paragraphs 41-42), in order to accomplish the dual objective of draining waste in one direction and replenishing the nutrient media tank in the other. Accordingly, Vetillard teaches away from a construction having identical membranes. Jensen does not teach or suggest identical membranes and, thus, does not cure the deficiencies of Vetillard. Accordingly, it is respectfully submitted that claim 42 is patentable over the art of record and is therefore allowable.

In view of the foregoing, it is respectfully submitted that the above-identified application is in condition for allowance, and allowance of the above-identified application is respectfully requested.

Please charge any deficiency or credit any overpayment in the fees for this amendment to our Deposit Account No. 20-0090.

Respectfully submitted,

/Richard A. Sutkus/
Richard A. Sutkus
Reg. No. 43,941

TAROLLI, SUNDHEIM, COVELL,
& TUMMINO L.L.P.
526 Superior Avenue, Suite 1111
Cleveland, Ohio 44114-1400
Phone: (216) 621-2234
Fax: (216) 621-4072
Customer No.: 68,705